

CLAIMS

What is claimed is:

1. A method of authenticating an image signal, comprising the steps of
 - (A) generating a transform representation of the image;
 - 5 (B) determining a digital signature unique to the image;
 - (C) identifying high frequency coefficients within the transform representation; and
 - (D) assigning values to the high frequency coefficients to correspond to the digital signature.
- 10 2. The method of claim 1, wherein step (D) includes using a preselected pattern of coefficient values that is representative of corresponding values in the digital signature.
- 15 3. The method of claim 2, wherein the digital signature is a binary number having a plurality of digits, wherein each digit has a value that is either 1 or 0 and wherein the preselected pattern includes assigning a first number value to a coefficient that corresponds to a signature digit having a value of 1 and assigning a second number value to a coefficient that corresponds to a signature digit having a value of 0.
- 20 4. The method of claim 3, wherein the first number value is an even number value and the second number value is an odd number value.

5. The method of claim 2, wherein the digital signature is a binary number having a plurality of digits, wherein each digit has a value that is either 1 or 0 and wherein the preselected pattern includes assigning a first chosen number value to multiple coefficients that collectively correspond to a signature digit having a value of 1 and assigning a second chosen number value to multiple coefficients that collectively correspond to a signature digit having a value of 0.

6. The method of claim 5, wherein the first chosen number value is an even number value and the second chosen number value is an odd number value.

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7. The method of claim 1, wherein the digital signature has a plurality of digits and the transform representation of the image includes a plurality of blocks that each have at least one high frequency coefficient and step (D) includes assigning a value to one coefficient in each block that corresponds to one of the digits of the signature.

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8. The method of claim 7, wherein there are a greater number of blocks in the image representation than there are digits in the signature and step (D) includes repeating the coefficient values corresponding to the signature a number of times such that each block includes a coefficient having a value corresponding to a signature digit.

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9. A system for authenticating an image signal, comprising
a transform module that generates a transform representation of the image
that includes high frequency coefficients;
a signature extractor module that generates a digital signature unique to the
5 image; and
a signature embedding module that assigns values to the high frequency
coefficients that correspond to the digital signature.
10. The system of claim 9 ,wherein each of the modules is embodied in a
10 computer.
11. The system of claim 10, wherein each of the modules comprises software.
12. The system of claim 9, wherein the signature embedding module uses a
15 preselected pattern of coefficient values that is representative of corresponding
values in the digital signature.
13. The system of claim 12, wherein the digital signature is a binary number
having a plurality of digits, wherein each digit has a value that is either 1 or 0 and
20 wherein the preselected pattern includes a first number value for each coefficient
that corresponds to a signature digit having a value of 1 and a second number
value for each coefficient that corresponds to a signature digit having a value of 0.
14. The system of claim 13, wherein the first number value is an even number
25 value and the second number value is an odd number value.

15. The system of claim 12, wherein the digital signature is a binary number having a plurality of digits, wherein each digit has a value that is either 1 or 0 and wherein the preselected pattern includes a first chosen number value assigned to multiple coefficients that collectively correspond to a signature digit having a value of 1 and a second chosen number value assigned to multiple coefficients that collectively correspond to a signature digit having a value of 0.

16. The system of claim 15, wherein the first chosen number value is an even number value and the second chosen number value is an odd number value.

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17. The system of claim 12, wherein the digital signature has a plurality of digits and the transform representation of the image includes a plurality of blocks that each have at least one high frequency coefficient and the signature embedding module assigns a value to one coefficient in each block that corresponds to one of the digits of the signature.

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18. The system of claim 17, wherein there are a greater number of blocks in the image representation than there are digits in the signature and the signature embedding module repeats the coefficient values corresponding to the signature a number of times such that each block includes a coefficient having a value corresponding to a signature digit.

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19. A computer-readable medium having a plurality of computer-executable instructions for authenticating an image signal, comprising:

a first program module that directs the computer to generate a transform representation of the image that includes high frequency coefficients;

5 a second program module that directs the computer to determine a digital signature unique to the image; and

a third program module that directs the computer to assign values to the high frequency coefficients to correspond to the digital signature.

10 20. The computer-readable medium of claim 19, wherein the third program module assigns values to the high frequency coefficients according to a preselected pattern such that the values assigned to the high frequency coefficients are decipherable to indicate the image signature.